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A Climate Saved is a Climate Earned

Whether we're leaving a dirty pot in the sink to "soak" because we don't feel like washing it, pushing off a yearly trip to the dentist, or forgoing a routine sweeping of the floors for the next week, the truth is that we all have the tendency to view tomorrow a little differently from today. It seems full of possibilities and potential, and most importantly, doesn't seem to require anything from us in the moment. As a college student, I've been guilty of leaving some assignments until the morning they're due, or chapters unread before a test, and the feeling of waking up on the day you can't push anything off anymore is quite an unpleasant one.

Regardless of the action, it's a fundamentally human tendency to, perhaps even unconsciously, ignore a gradually building problem or delegate actions that could improve it into the future, ultimately making the problem more insurmountable than when it began. Yet we often continue this pattern despite the negative effects in various aspects of our lives — but this problem isn't limited to dirty dishes and missed appointments. It is precisely this human tendency to be less aware of the gradual, unpleasant, or complex that leads to some of the largest global issues of the day, such as climate change.

This topic has evolved to become one of the most contentious issues in the United States, with politicians tossing barbed rhetoric both ways across the aisle, and some people claiming not to believe in climate change at all. I have hope, however, that productive conversation about this topic can be held in the years to come; especially considering how crucial these years will be in

the fight against global warming. As a member of the generation that could potentially be handed a damaged environment if no action is taken, I want to make every effort to protect our country — our world — and the people that will inhabit it. Modern science has deduced that a global temperature warming of above 2 degrees Celsius (compared to preindustrial temperatures) could produce irreversible effects on our environment that will be both economically severe and harmful to the natural world. I don't want to see that in my lifetime, and I don't want it to be a reality in the lifetimes of my children; I want to be a member of the generation that stops this momentum in its tracks.

I think that at the end of the day, that's what most people want. However, the complexity of climate change and the politically charged nature of the actions needed to combat it have resulted in a clouded issue marked by years of conflict and inaction. It's for this reason that I want to evaluate an aspect of climate change that's perhaps less well-worn than traditional arguments over emission levels and ozone layers: the effect of climate change on our oceans. Increasing emissions as a result of passive domestic policies on fuel economies, energy sources, and corporations have the potential to allow the earth — and therefore the oceans — to warm, leading to a myriad of negative effects. These include, but are not limited to, increased disastrous weather events, sea level rise, and natural ecosystem harm that could decimate both those reliant on the ocean for employment and those who rely on it as their main source of protein; the latter of which includes a third of the population of the US, according to Dr. Dong-Ha Min, an oceanography professor at the University of Texas at Austin whom I interviewed to gather more information on this topic.

To begin, I want to establish what I mean when I say "global warming." It's a term that's tossed around quite a bit, and often used interchangeably for climate change; in actuality, global

warming is a unique term altogether. The earth, as we all know, is heated by the sun — however, in a concept known as a "heat budget," much of it is reflected back into space off of clouds, oceans, and other reflective surfaces. Global warming occurs when this natural process of reflecting heat can't be completed because gases like carbon dioxide in the atmosphere allow heat in but not out, like a two-way mirror. When heat is reflected outward but is 'caught' by these gases, the atmosphere warms, leading to an overall warming of the earth — including its oceans.

Examples of harmful policies that accelerate this process can be seen in President Trump's rollback of several EPA regulations beginning in 2019, in which his administration attempted to reverse or reduce 100 previously-held regulations and restrictions. These rollbacks included weakening standards for vehicular greenhouse gas emissions, removing Barack Obama's "Clean Power Plan" in favor of delegating carbon emission limits to individual states, partially repealing a regulation limiting methane emissions on public lands, and — most notably — withdrawing the United States from the Paris Climate Agreement. All of these decisions have the potential to set us back years in combating global warming. To take an example of just one of these rollbacks, the weakening of vehicular emission standards stands to produce only "a fifth of the cumulative emissions abatement we would expect under the Obama-era standards," the emission standards that were in place in 2019 (Pitt and Young).

Considering that these standards were already not enough to completely slow the pace of global warming, weakening them is both illogical and dangerous, and indicative of an administration that is not concerned with future consequences. Climate change is an issue that requires aggressive action prematurely — in other words, the worst is yet to come. But just because the worst-case scenario is delayed a few years doesn't mean we have a few years until we have to do anything: we have to do something now. The more that we allow these trends to

continue, the more that the atmosphere and our oceans can warm, creating larger issues for our future.

But what exactly does the warming of the ocean cause? As touched on earlier, many things — but I'll summarize a few here. Warming oceans have the capacity to raise sea levels, as warmer temperatures cause land ice to melt and add to the sea level; additionally, warmer water is less dense than cold and expands, further contributing to sea level rise. Warming water can also increase the rate of intense hurricanes, as storms draw increased energy from warm waters, and warmer temperatures can cause more potential rainfall to evaporate into the atmosphere (Biasutti). This is an escalating issue that has already been observed in my hometown of Houston, Texas.

In 2017, Hurricane Harvey hit Houston and left devastation in its wake — flooded homes, stranded families, piles of debris stacked taller than me on the sides of the roads. My street flooded with water that crept right up to our doorstep and hovered there for a few days. School was canceled for three weeks in light of the destruction that Harvey caused, and I spent those weeks volunteering with my church and family to rip the drywall and floors out of homes that were completely inundated with storm surge waters, and deliver food and clothing to families that had lost everything.

I was only seventeen, but I'd never seen anything like it before. Harvey was a Category 4 storm, but what really drove its devastation was that it stalled over Houston for four consecutive days of relentless rainfall, rather than moving steadily inland as most storms do. This was due to a high air pressure system in the western US and a low pressure system in the east that effectively 'boxed' Harvey in; this, combined with the extra water vapor in the atmosphere due to warming temperatures, dramatically increased the amount of rainfall that Harvey was able to produce during its stint over Houston. The air pressure systems boxing in Harvey are thought to have been

a result of a weakened jet stream due to warming temperatures, as well — thus, global warming was the cause behind two major factors in keeping Harvey centered above Houston for days. (Wagstaffe).

Hurricane Harvey's rainfall was estimated to be be "40% higher than a similar storm [would have been] decades ago," according to a 2017 study in Geophysical Research Letters. 40% more rainfall means that even more families had to have water rush into their homes instead of just into their streets; even more Houstonians had to be rescued by boat from the roofs of their houses; even more money had to be allocated to the city in disaster relief. Hurricane Harvey totaled a staggering $125 billion in damages overall, the second most costly hurricane in the US on record, behind only Hurricane Katrina (Walters).

This is just one example of the direct effects of climate change on the oceans; there are honestly too many to list. What's more is that these effects are not limited to those living on the coast. If you live far inland, it can be easy to brush off the effects of flooding coastlines, changing marine ecosystems, and hurricanes because they don't immediately pertain to you. But the effects can trickle down to every member of the United States when one looks carefully. Do you purchase products or do business with firms that reside along a coast? Do you have family living in large metropolitan areas like Houston or Miami? Do you, like ⅓ of the US population, rely on marine organisms as a main source of protein? Even if the answers to these questions are no, the influx of disaster relief that will be allocated to cities affected by increased weather events and sea levels will result in a much larger national debt — a debt that has been creeping steadily upward for years. This could result in the elimination of social programs or even an increase in taxes as the US will have to shell out more and more money each year to correct the effects of climate change rather than the source — emissions, specifically carbon dioxide and methane. Ultimately,

no one will be wholly unaffected by climate change. It's just easier for each of us to think that we're the exception, and I have absolutely been guilty of this.

But what can we really do? This has always been the main obstacle to climate action for me. My contributions can feel so small and useless against a tide of rising emissions and pollution — and I'm not going to sit here and tell you that turning off the lights when you leave a room or recycling are going to be enough to fix this, so long as "we all do it together," because if we're being honest, they aren't. This is not to say that these actions aren't important and fundamental aspects of combating climate change, but rather that they are not enough on their own. To solve a collective issue, we must take collective action, and it is for this reason that contacting your personal representatives in government to enact climate-friendly policies is the best solution we currently have.

If you haven't already rolled your eyes and clicked off, yes, you read that right — my big solution is to contact policymakers through phone or email to reinstitute stricter emissions regulations and enact policies on climate change prevention. I know that calling or sending an email to your Senator or Congressperson seems a bit anticlimactic (and perhaps a touch useless), but I encourage you to set aside pessimism for just a moment. During a past internship with anti-poverty nonprofit The Borgen Project, one of my biggest tasks was calling or emailing Congress each week — the reason they cited for this assignment was that when a constituent in a representative's district or state calls with any sort of comment, it is logged by legislative aides, imported into a spreadsheet, and repeated concerns can be brought up to the representative personally. Most people don't contact their representatives at all, beyond perhaps on social media — however, if even more than one person emails or calls with the same concern, representatives are more likely to be informed. In fact, a study conducted by the Congressional Management

Foundation found that of all congressional staff on Capitol Hill, "(96%) reported that if their Member of Congress had not arrived at a firm decision, individualized postal letters would have 'some' or 'a lot' of influence on the Member's decision, and 94% believed individualized e-mail messages would have 'some' or 'a lot' of influence."

This does not ensure their action on behalf of the concern, but it does mean that they are aware of it, and more likely to consider taking action in order to gain votes from these constituents for reelection. Especially when a race is coming up, politicians will often be more receptive to their constituents in order to advance their own political success. Phone calls and handwritten letters are the most effective way to do this, but as someone who hates making calls herself, emails get the job done too.

This isn't foolproof. As I'm sure you're aware, some politicians don't serve the public's interest as well as they should, and repeated emails from their constituents won't change that. It is entirely possible that any email you send or call you make will go unnoticed, or actively ignored; but really, what harm does this cause you? In truth, you have nothing to lose, and everything to gain.

I'm including an email template below for you to try this out yourself, as well as a link to determine your personal federal, state, and local representatives. Most local politicians will have an email directly included in this database; federal and state officials will most likely have a phone number, but email addresses are easily found if you search "'Representative name' + email." If you'd like, you can use the template as a basis for a phone call or even an original email; whatever the case, I encourage you to try. In an age where communication is faster than ever and information is always a click away, it is our responsibility to educate ourselves and act

with the greater good in mind. Climate change and its effects on the oceans stand to be a large issue for generations to come — unless we take premature action to reduce its impact.

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myreps.datamade.us

Dear [Representative Name]

I'm writing to you today on behalf of an issue I consider extremely important to the future of our country's security — climate change. It's a contentious issue that can often cause people to roll their eyes and stop listening, so I'll attempt to present it in a different light.

Not only do emissions building up in our atmosphere lead to global warming, but also to a warming of the world's oceans. Warmer waters might sound nice in terms of a summer swim, but in actuality, rising temperatures can have devastating effects. Namely, sea levels can increase as warming waters and overall temperatures continue to melt land ice; as well, warm water is less dense than cold and takes up more space as a result of something called "thermal expansion," pushing sea level even further upward. Warming oceans also lead to more extreme and disastrous events, as can be seen in the recent increase in intense hurricanes that cost billions in disaster relief, a trend that will only continue to push the national debt skyward if we are not proactive in reducing the overall source of these effects: rising emission levels.

Under President Donald Trump's administration, several EPA rollbacks were instituted that relaxed emission regulation and environmental protections. With the impending election of

President-elect Joseph Biden, it is likely that these will be reversed; however, climate change is something that requires permanent action, not action that is reversed and reinstituted with each new administration. It is for this reason that I am writing to encourage congressional support of reversing these rollbacks and reinstituting the previously-held Obama-era standards; as a concerned citizen of this country, I am asking for cooperation between the legislative and executive branches to see change that will be here to stay.

I understand that these regulations are not popular with some energy corporations and could cost a fair amount of money now. But I ask you to consider it as an investment; paying now so that we don't have to pay later. I urge you to consider my opinion as your constituent, to both uphold your duty to this country and to this country's future.

Best,

[Your Name]

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